

USEC'S Responses to USEPA 1996 NESHAP Inspection (July 22-26,1996)

Specific Findings

SAMPLING SYSTEMS:

1) On the X-344 Gulper System, the flanges were cracked, allowing the possibility of an unmonitored release of radionuclides. The fastenings were inappropriate for the area. Masking tape and threaded rod with nuts on each end holding them on the system need to be re-evaluated. It would be more usual to find the nuts locked in place with a second nut or a sealing material. This should also preclude the necessity of any type of tape or outside adhesive sealing on the flanges. It would also be recommended that there be a regular checking of the flange conditions at this location and any other location where similar situations may arise.

Response: PORTS Engineering performed a review of the system immediately after the discovery of the cracked flanges. The cracked flanges were replaced and a flexible transition was installed to absorb the vibrations created by the fans. The modifications to the system were completed by August 2, 1996.

2) In the X-326 building, the Top, Side and E-Jet samplers need to be reconfigured to conform with the other sampling systems. A portion of the current system has lines that are excessive in length as well as an excessive number of bends. This could be easily remedied by the removal of this portion of the system and consolidating the sampling system into individual units, as the other systems have in place currently.

Response: During a previous inspection in 1993, criticism was offered considering the length of direct sampling lines and the number of bends that each contained. The Top, Side and E-Jet sample lines were reconfigured as per USEPA recommendations. The current reconfiguration in question requires the relocation of pressure transmitters and Dart Flow Computers from a central cabinet to create individual samplers. This relocation would not improve the accuracy of confirmatory measurements. The current configuration does not impact flow measurements and any reconfiguration would be strictly cosmetic in nature. PORTS requests that, based on the above information, the item be classified as a general observation as opposed to a finding.

DOCUMENTATION

1) During the investigation, the use of an unmodified, in-house developed computer spreadsheet program for calculating Tc-99 concentrations using liquid scintillation counting data, became an issue. Upon interviews with laboratory personnel, it came to light that a change in the method used to calculate Tc-99 concentrations from raw data

generated by liquid scintillation counters had occurred. Of the three computers used to calculate the Tc-99 values, at least one computer system was not updated. It is unclear the exact number of incorrectly calculated values for Tc-99 that are currently assumed to be correct. The PORTS laboratory needs to determine and report to the Region 5 office the numbers of incorrectly calculated Tc-99 values as soon as is practical. Additionally, a table needs to be prepared listing the incorrect values along with the correct values. The Region 5 office needs to be apprised of the potential impact(s) of the issue.

Response: All spreadsheets for the above mentioned calculations have been updated, verified, and approved. The data package in question was batch #96070829. See Table 1 for a list of results which were reported and the corrected results obtained when the spreadsheet was updated. All data packages generated since the calculation method was changed were reviewed and it was determined that batch #96070829 was the only one found to have calculation errors. In all other batches the spreadsheet calculation had been correctly modified by the analyst at the time the report sheet was generated. Based on these data, there were only three samples which were different from the reported results, and the percent difference ranged from 7.2 to 7.7. Statistical analysis performed by the laboratory statistician indicate that the two data sets are not statistically different at the 99% confidence level.

2) The spreadsheet calculations for the Tc-99 did not include MDA values. The actual MDAs are likely below the reporting limit; however, there is no way to verify this if the MDAs are not calculated. To remedy this situation, the MDAs need to be included in the calculations for the Tc-99 data.

Response: The problem occurred because the spreadsheet had not been updated, therefore, the analyst needed to make a slight spreadsheet change in order to have the MDA's calculated. The MDA values in this batch (96070829) were not calculated because the analyst had not made these changes. The Section Manager was aware and did not consider the additional effort warranted because all sample weights and aliquots for Tc-99 are the same from week to week. In the review of all 1996 data packages, two more batches (96070871 and 96070935) were found without MDA's calculated. All three batches have since been corrected.

3) It was noted that in the Data Package Review Checklist for batch #96070036 (U-235) was not signed or apparently reviewed by the supervisor. This signature is required by the laboratory Quality Assurance Plan. It was further noted that the Data Package Review Checklist for batch #96070448 (U-235) was left totally blank, aside from the batch number. This data package was apparently not reviewed, though the package contained all of the information that is required. From these two separate examples, it appears that the procedures for verification of completeness needs to be addressed. It would also be advisable to do a more thorough audit to ascertain how frequently this issue has occurred as well as its potential impact on the data provided.

Response: The first batch in question is batch #96070936. In this case the supervisor had signed the report sheet to indicate review, but apparently had forgotten to sign the Review Checklist as well. In the second batch in question (96070448), as indicated in the audit findings report, the Review Checklist had not been completed, although the package was complete. The supervisor has since reviewed this batch, filled out and signed the Checklist. All other 1996 data packages have been reviewed and, in all cases, the Review Checklist was filled out and signed. There is an apparent misunderstanding of the approval signature requirements. There is a requirement for the supervisory approval signature associated with the data report and verification that Analis results are entered correctly. However, there is no requirement for a supervisory signature on a Review Checklist or even a requirement for a Review Checklist. This is used only in the Radiochemistry Section as a voluntary aid to the individuals doing a review of the package.

4) Uranium and Technetium release data are hand calculated from the data reported in the Analis system and from data recorded from the vent samplers. While these hand calculations are verified by a second individual, there would be less probability of an error if they were performed by a validated computer software (i.e. spreadsheet).

Response: The referenced paperwork for the collection of vent sampler information and hand calculations is a Primary Record referenced in the Continuous Vent Sampler Operating Procedure. Implementation of a computer program (spreadsheet) would not eliminate the Primary Records mentioned above. The Primary Records would still be generated, maintained and archived. A spreadsheet concept was used in the late 1980's and contributed to the reporting of erroneous results due to data entry errors. The verification of hand calculations was introduced at that time and has been very efficient. The verified values are maintained in a database. PORTS will investigate the possibility of implementing a computer program as an additional form of verification of calculated results.

5) There is no indication on the vent sampler log sheets of the trap numbers which are put in place. Some of the entries on these log sheets were marked through, voided, without being initialed and dated. The QA/QC program currently in place requires changes to be initialed and dated.

Response: The Operational Sampler Log as defined in the Continuous Vent Sampler Procedure is a record of sampler performance recorded once per twelve hour shift. It is not a permanent record of ongoing trap changes. The trap change notation is made only as a means of information for another department performing offshift operational checks. Actual trap changes originate with a permanent bound record notebook assigning sample number and trap change identification.

Log sheet entries are made by both using personnel and other departmental personnel recording offshift values. Mistakes are infrequently made when recording values.

However, these are resolved on the next "O" shift as the Operational Sampler Log is reviewed and data entries made in a permanent bound primary record notebook. PORTS has recently implemented guidance to all personnel to rectify written errors by making a single mark through the error, initialing the document and placing the date of rectification.

Other Observations/Issues

1) Gloves were disposed of in a waste receptacle that had a sign stating that it was for sanitary waste only. Procedures for disposal of specific items should be specified more clearly.

Response: Procedures and policies for the disposal of various types of waste do exist. The disposal of a glove in a sanitary waste container does not necessarily present a problem. Disposal of an unused or defective glove which is not contaminated is not a problem.

2) SOPs for software validation need to be generated for any on site software that may be used for compliance purposes.

Response: All spreadsheets associated with the laboratory concerning NESHAP compliance have been updated and verified for validity.

3) Documentation for the abandoned sampling ports on the sampling systems in the X333 building needs to be provided. These additional ports could potential cause additional turbulence that could affect the representativeness of the sample collected.

Response: The reference is to sampling systems (plural) that have been abandoned. Only one sampling system has been modified where sampling points have been relocated. This location is the X-333 Seal Exhaust, SE1 (Unit #9). The sampling point was moved at the request of USEPA in a previous audit. The American National Standard Institute Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, ANSI N13.1 Section 4.2.1.2, Sampling from a Duct or Exhaust Stack, states that the sampling point should be a minimum of five diameters downstream from abrupt changes in flow direction or prominent transitions. The relocated Insertion Mass Flowmeter is 35 inches from its previous location (five duct diameters would be 30 inches). The previous location is plugged with a threaded pipe plug. The sampling probe is 13 1/2 inches from its previous location. The previous location is plugged with a threaded pipe plug. Even though the distance is less than the criteria specified in ANSI 13.1 it should be acceptable based on the flow characteristics of the vent stream. The Reynolds number for the X-333 Seal Exhaust Sampler (Unit #9) is approximately nine times the critical Reynolds number which corresponds to the transition from turbulent flow to laminar flow. Significant turbulent flow exists so that any eddies produced from the plugged one inch side arm hole should be lost in the noise.

4) A log for the sample shaker to provide data on the actual time of mixing for the alumina is suggested. This would provide documentation on the mixing procedure(s) and the time of mixing prior to further sample preparation.

Response: From previous studies, trap material becomes homogeneous after mixing for approximately six hours. Current procedures list mixing of approximately 16 hours, since it is a convenient overnight operation.

5) While the calibration data was available for the ambient monitors in documentation kept at the facility, it is recommended that calibration stickers be placed on the instruments also. Additionally, any line rinse analysis for the ambient monitors needs to be included in the data analyzed for diffuse emissions.

Response: Calibration stickers are placed on the instruments upon completion of the calibration. PORTS also maintains the records/documentation of calibration for the above instrumentation in a location separate from the instrumentation. PORTS performed line rinse analyses of ambient air monitors in the past. The presence of U-234 and U-235 were not detectable and alpha, beta and gamma were not detected above background in any of the analyses. PORTS does not use ambient air monitoring to demonstrate compliance with 40 CFR 61, Subpart H. Ambient monitoring is performed as a means of comparison to results of computer modeling.

6) An annual composite analysis of the secondary traps for TRU materials is recommended. This would provide additional data about potential radionuclide emissions from past reprocessing activities.

Response: PORTS will submit samples from each secondary trap when a trap change occurs for TRU analysis.

Table 1

ANALIS ID#	Reported Results Tc ug/g	Corrected Result Tc ug/g	Percent(%) Difference
Blank	0.0000	0.0000	0
Std	0.0117	0.0126	+7.7
960620-019	0.0004	0.0005	+25*
Spike	0.0125	0.0134	+7.2
Rep. Spike	0.0121	0.0129	+6.6
960620-020	0.0000	0.0000	0
960620-021	0.0001	0.0001	0
960620-022	0.0001	0.0001	0
960620-023	0.0001	0.0001	0
960620-024	0.0000	0.0000	0
960620-025	0.0052	0.0056	+7.7
960620-026	0.1268	0.1360	+7.2
960620-027	0.0621	0.0666	+7.2
960620-028	0.0001	0.0002	+50*
960620-029	0.0001	0.0001	0
960620-030	0.0003	0.0003	0

* the asterisk is present for these high percentages, but it should be remembered that the reporting limits are <0.001 ug/g.